

This Month!  
EAS Officer Elections



# The Refractor

The Bulletin of the Eastbay Astronomical Society  
Founded in 1924 at Chabot Observatory, Oakland, California

www.eastbayastro.org

Volume 80  
Number 4 & 5  
December 2003  
January 2004

## January 2004's talk: Galaxies Near and Far

Saturday, January 3, 2004  
6:30 pm – EAS Holiday Pot Luck Party  
7:30 pm – Speaker: Bryan Mendez

Chabot Space & Science Center  
Physics Lab, 2nd Floor, Spees Building

*Note: For 2004, most if not all General Club Meetings will be held on the FIRST Saturday of the month. Therefore, the newsletter prior to the next meeting will actually be the prior month's newsletter. So, for example, in order to announce the January 2004 meeting, the announcement must be made in the December 2003 newsletter.*

**B**ryan Mendez is an Education and Public Outreach Scientist at the Center for Science Education at UC Berkeley's Space Sciences Laboratory. Supported by NASA Space Science Missions, he works to improve science education and literacy.

Born in Traverse City, Michigan, Bryan attended Traverse City Senior High and was an active musician, playing the saxophone in several different bands. He then attended The University of Michigan and received two degrees: a BA in Musical Arts, and a BS with honors in Astronomy and Astrophysics, with a concentration in general physics. In 1997, Bryan moved to



California to study Astronomy and Astrophysics at UC Berkeley, and continues his studies to this day. He's also a Project Astro participant, and was a graduate student astronomy instructor, because astronomy is a great passion for him and he just loves to teach it.. ★



*How can we tell how far galaxies are from us? A Cepheid Variable is a star whose intrinsic or true brightness is known, and because of this, we can accurately determine distances by measuring how faint they are (the further they are away, the dimmer they appear).*

*However, not all galaxies have Cepheid Variables in them. Another method can be used, called TRGB (Tip of the Red Giant Branch), and is what our speaker will tell us about in his talk.*

*Note: There is no Dinner with the Speaker this month, as we are holding a holiday pot luck dinner, instead.*

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## Otto Struve — Yerkes, McDonald, Leuschner, NRAO Green Bank

By Ellis Myers

In 1835, Wilhelm Struve measured the parallax of Vega, becoming one of the first three astronomers to provide proof of the Copernican theory that Earth moved in a heliocentric orbit. In 1839 he founded the Pulkovo Observatory in St. Petersburg. On August 12, 1897, Wilhelm's great-grandson Otto was born in Kharkov, Ukraine.

Otto Struve was the eldest child of Ludwig Struve, who was at the time director of the Kharkov University Observatory. Great-grandfather Wilhelm had escaped Germany to avoid being drafted into Napoleon's army, and had settled in Estonia. Young Otto grew up equally conversant in Russian and German. At the onset of World War I, he graduated from the gymnasium and entered the University of Kharkov to study mathematics and astronomy. But in 1916 he left his studies and enlisted in the Russian Imperial Army, where he became an artillery officer. At war's end, he returned to the university and obtained a degree in 1919. He immediately joined the White Russian Army in the civil war, and in July he was wounded in action. Through many tribulations, Otto Struve found himself a refugee in Turkey. He was able to find work as a lumberjack.

Meanwhile, knowing of the plight of the Struve family—Ludwig had died, as had one brother and a sister—the head of the Berlin-Babelsberg Observatory (where Uncle Hermann Struve had been director) wrote to Edwin Frost, director of Yerkes Observatory, seeking aid for Otto. Frost sent an offer to Struve, which Struve had to take to the YMCA for translation, as he knew little English. At length, Struve found his way to Williams Bay, where he came dressed in purple trousers, a green jacket, and orange shoes, bought at a flea market to exchange for his tattered Russian officer's uniform.

From this time, Struve progressed quickly, earning a doctorate at the University of Chicago in 1923. He was immediately appointed as instructor, and he advanced to assistant professor in 1927 and associate professor in 1930. He succeeded Frost as director of Yerkes in 1932. He had become an American citizen in 1927.

Struve studied spectroscopic binary stars for his thesis, and continued work with radial-velocity measurements. He also became interested in interstellar absorption lines. His published papers comprise over 900 publications involving a wide variety of astronomy and astrophysics observations. Included are several books as well as articles in popular journals such as *Sky & Telescope*.

In 1926, W. J. McDonald, a prominent Texas banker, left

most of his estate to the University of Texas for the express purpose of establishing an astronomical observatory. Relatives contested the will on the grounds that the wish to endow an observatory was self-evident proof of insanity. But then the University of Texas had the problem of having money but no astronomers. A partnership with the University of Chicago was begun, and Struve was instrumental in developing all phases of the new McDonald Observatory. He directed both Yerkes and McDonald until 1950.

Overworked, Struve decided on a complete change; and he accepted a professorship at the University of California at Berkeley. There, he was director of the Leuschner Observatory, and he was able to continue his research observations at Mount Wilson. As head of the Astronomy Department he was also able to devote more time to overseeing graduate students, an interest he had not been able to satisfy at Yerkes.

In 1959 he became the first director of the National Radio Astronomy Observatory in Green Bank, West Virginia. He later served as visiting professor of astronomy at Caltech, and as a visiting staff member at the Institute for Advanced Study at Princeton. He died at Berkeley in 1963.

Otto Struve was noted as a "twenty-four hour astronomer." He gave full commitment to his work, and he expected his staff and students to do the same. Aside from his scientific accomplishments, he also made profound changes in the way American astronomy works. In building McDonald Observatory, he established the concept of a scientific consortium, a governing model that is evident in the operation of Kitt Peak National Observatory, for example. Struve served on the original committee for building KPNO. There are now many other examples of multi-university cooperation in providing world-class instrumentation to astronomers.

Struve was honored in 1944 with the Gold Medal of the Royal Astronomical Society. The Astronomical Society of the Pacific gave him the Bruce Gold Medal in 1948 and the G. Bruce Blair Award in 1958. He received the Draper Medal of the Nat'l Academy of Science among many other honors.

In his book *Astronomy of the 20th Century* (with Velta Zebergs), Otto Struve calls the period from 1900 to 1960 the Golden Age of astronomy leading in to a new era of space exploration. Otto Struve was certainly a principal navigator of that age. ★

*The Otto Struve 82-inch telescope is housed under this dome at the McDonald Observatory in the Davis Mountains of Texas.*

*Photo by  
Ellis Myers*



# EASTBAY ASTRONOMICAL SOCIETY MEMBERSHIP APPLICATION FORM

NAME: (please print) \_\_\_\_\_ Date: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY, STATE, ZIP \_\_\_\_\_

DAY PHONE: (\_\_\_\_) \_\_\_\_\_ EVE PHONE: (\_\_\_\_) \_\_\_\_\_

EMAIL ADDRESS: (please print) \_\_\_\_\_

## MEMBERSHIP CATEGORIES:

*Important Note: If your address label has 1004 next to your name, you are already renewed for 2004!*

- Regular ..... \$24
- Family ..... \$36
- Student ..... (digital newsletter only) \$10
- Contributing ..... \$40
- Sustaining ..... \$60 or more

## Optional discounted 12-month magazine subscriptions:

- Sky & Telescope ..... \$32.95
- Astronomy ..... \$29.00

*Important Note: All magazine subscriptions must be in to the Treasurer before September 30th for prompt handling!*

- Optional, tax deductible donation(s) to any of the projects of the Eastbay Astronomical Society:
  - Burns Library
  - General Project Fund
  - Betty Neall Youth Award Fund \$ \_\_\_\_\_

Other: \_\_\_\_\_

Total Enclosed: ..... \$ \_\_\_\_\_

Please mail this form and your check or money order payable to:

Eastbay Astronomical Society  
19047 Robinson Road  
Sonoma, CA 95476-5517

For further information, please contact Treasurer and Membership Chairman Don Stone at (707) 938-1667, [ddcstone@earthlink.net](mailto:ddcstone@earthlink.net), or write him at the Sonoma address, above.

As a cost savings to us, instead of getting a mailed newsletter, would you prefer to be notified via email that:

- The .pdf version of the newsletter is available for download from our website

And,

- Are you interested in volunteering your time/equipment for public stargazing at Chabot?
- Are you interested in doing other volunteer work for Chabot and/or the Eastbay Astronomical Society?

**THANK YOU FOR RE-JOINING US!**

# Join the Eastbay Astronomical Society

[www.eastbayastro.org](http://www.eastbayastro.org)



**What you get when you join the Eastbay Astronomical Society:**

**Monthly newsletter, The Refractor**, with interesting articles on currently visible constellations, upcoming lectures, club events, and other local news.

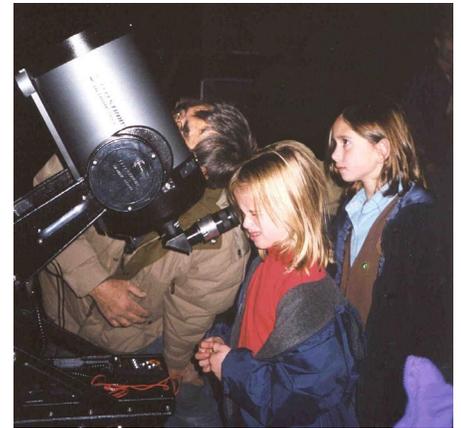
**Monthly meetings with featured guest speakers** on diverse subjects having to do with astronomy and the space sciences (CCD astro-photography, planetary geology, finding deep-sky objects with telescopes or binoculars, NASA space probes, etc.), and are usually held in the 2nd Floor Astronomy classroom on the first Saturday of the month at 7:30pm. Look for direction signs.



**Yearly events**, including but not limited to: Meteor shower watches, the annual EAS awards dinner, Bort Meadows star party (local), Barcroft Station high-altitude star party in the White Mountains (several days, about a 6-hour drive from the Bay Area).

**Weekend stargazing at Chabot on Friday and Saturday nights** (weather permitting). Along with the big 'scopes (Rachel and Leah,

the 20" and 8" antique refractors housed in two separate observatory domes), members are welcome to bring their own equipment to gaze at the current night sky's wonders, receive free volunteer training to help Chabot with public viewing, get advice on how to buy or use equipment, and just have a good time chatting with old and new friends. As a member, you'll also have the satisfaction of contributing to the educational opportunities for children in our community.



**Automatic membership in the Astronomical League, with quarterly newsletters.**

**Opportunity to subscribe to Astronomy or Sky & Telescope at discount prices.**

**Special discount rates for purchases from various astronomical vendors.**



Also, in conjunction with the Chabot Space and Science Center, the Eastbay Astronomical Society also sponsors the Telescope Makers' Workshop at Chabot; you buy the mirror blank and grinding tool; the Workshop provides the instruction, grinding and polishing supplies, and configuration testing free of charge. You can make your own telescope, and with a little luck, it will be optically superior to most anything you could buy for twice the price from the stores or catalogues(!) And you will have a much better idea how telescopes work. Every Friday night in the Physics Lab., 7 - 10 pm.- look for the signs.

Don't delay! Join the Eastbay Astronomical Society, and begin expanding your knowledge of, and appreciation for, the night sky, our world, and the Universe!

## Galaxy Explorers!

The Galaxy Explorers Program is a group of high school students volunteering and working as interns at various positions around Chabot. They work many jobs, from Exhibit Explainers, to Activity Designers, to Classroom Assistants. Their work is made possible by a grant from the National Science Foundation and they're led by Lisa Hoover. At Chabot, they include: Stefan Armijo, Natasha Cayco-Gajic, Andrew Chin, Adrienne Chin-Perez, Ho-Hin Choy, Sara Frost, Roger Fu, Nick Galano, Nick Geiselman, Channel Hunt, Sophie Lee, Sullivan Lee, Daniel Nowicki, Kenny Oslund, Jessica Staneley, Sara Thomas, and Austin Yung.

The team meets once a week to go over current astronomy topics, decide on projects, and restores already existing telescopes. The team also uses their newest restored telescope, *Maya*, named after Maya Angelou, a famous and influential writer and poet of our times (formerly, the Dublin Telescope) to observe during public viewing nights at Chabot on the weekend. They help with the lines waiting to view through the telescopes by answering the public's astronomy questions, and directing traffic. And soon, they will be moving on to other, larger telescopes, as time allows. Don't forget to look for them and say 'hi' during evening observing!

*Two Galaxy Explorers will be assigned to the EAS Board of Directors as representatives of their group. Ed. ★*



*Galaxy Explorers using Maya to show Mars.  
Photo by C. Roberts*

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## EAS Annual Awards Banquet Date Set

The date is Sunday, March 7, 2004, and thanks to our intrepid Programs Director, Dave Rodrigues, our speaker this year is Dr. Jeff Moore of NASA Ames Research to talk about the current crop of Mars probes on their way to the Red Planet, what they'll be doing, and what we hope to learn from them. We will use the caterer we've been using the last several years – Harry's Hofbrau. Mmm-mm! I can taste their roast beef, roast turkey, and spinach lasagna even now! ★

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## For Sale: EZ Laser for Newtonians & Losmandy Plate

1)a. EZ Collimator Laser 1.25", BlueAnodized" Absolute Cherry (\$90 new) \$65 b. Techtron Collimation site tube & Auto collimator & Manual \$65

2) GM 8 UV Universal dovetail plate w/4 extra holes machined by Parallax for their tube rings...(new \$50) \$40. Mounts TeleVue, Takahashi, & Astrophysics tube rings

Contact: harrysue@jps.net

## Letter to the EAS from an old friend

Greetings from the Florida Eastbay!

It has been a little over four months since we moved to Florida. I cannot say it's been uneventful...but I can say it will take me a year to unpack all of my astronomy books!

We bought a home centrally located from all of our families; we're about a five-minute drive from the Atlantic Ocean. Debbie insisted on a three-car garage to "get all my telescopes in place and out of the house!"

I have been busy with several things. First I am finishing a new book about binocular astronomy (entitled *Binocular Stargazing*, to be published by Stackpole Books in 2004). It's a lot of work, but something I have always enjoyed. And in fact I've already started sketching out what I think will be my next three books!

I've been doing a lot of consulting work, everything from planetarium design to evaluating space artifact collections. I have several "doors" open, position-wise; we'll have to see which one is most-suited.

I've also been giving a lot of talks and scheduling future talks around the country, as well as outside the United States. This includes everything from meteorites (and booksignings, which are always fun!) to Ancient Chinese Astronomy.

I was elected president of the Antique Telescope Society (this ball got rolling by Carter Roberts several years ago...) and elected to the Board of the Association of Lunar and Planetary Observers. In addition I now serve on two non-profit Boards. So I am keeping busy in this aspect.

I've also been helping out with the planning of AstroCon 2004, being hosted by the EAS and AANC. We've got a great group of people working on the Convention (and can use more—*hint, hint!*). And I've also kept in touch with the planning for Chabot's *Dragon Skies*; it sounds very exciting!

And yes...I've actually done some observing. It's nice to have some time to drag out the telescope or binoculars every once in a while.

If you get to the Sunshine State, please look us up! And the best wishes for a wonderful holiday season and a terrific 2004. See you soon...

Keep Looking Up – Mike

Mike D. Reynolds, Ph.D.  
Executive Director Emeritus, Chabot Space & Science Center  
2347 Foxhaven Drive West, Jacksonville FL 32224-2011  
astrogator90@aol.com ★



*Dr. Mike shares a telescope with a Florida Snowman!*



## Editor's News 'n Views

Howdy Astro Fans!

*Tis the season to be jolly,  
Fa-la-la-la-laaa, la-la la lahhh,  
Don your undies, vinyl poly,  
Fa-la-la-la-laaa, la-la la lahhh,  
Grab your scopes and take them outside,  
Fa-la-laaa, la-la lahhh, la, la lahhh,  
Sat-urn's show-ing off its best side,  
Fa-la-la-la-lahhhh, la-la, la, lahhhhh*

**It's Saturn Season** and it's still quite spectacular, even though it's rings are past maximum tilt. (Max tilt allows us to observe the most detail in the rings. Sometime in early January, 2009, the rings will be at their most edge-on to us, and will be so thin it'll be hard to see them at all!) Even though you can tell it's not quite as tilted as it was last season, it's still great, and I encourage you to look at it yourselves, and to come up to Chabot's big scopes on public nights, or EAS Members' Only nights, to view it. Be sure to dress for ARCTIC conditions, whenever you come; that means thermal underwear ("undies"), heavy jackets, scarves, hats, gloves, and you might even consider those electric sock thingys. *It is* Winter, and it pains us to see underdressed people up there.

As was mentioned previously, we are NOT doing a general EAS meeting the month of December, as Chabot had all the weekends booked-up for holiday events. The next meeting will therefore be held the first Saturday of January, 2004 (January 3rd), **and most if not all the rest of the general EAS meetings in 2004 will be the first Saturday of each month.** That should make it easy to remember! This will have an effect on the newsletter, though: from now on, the next month's newsletter will come out the previous month. So, for example, you will receive the February issue of the newsletter sometime near the last week of January. To make this happen, I will combine the December 2003 and the January 2004 newsletters into one issue – this issue.

Here's an interesting item: We've got our own club lapel pins, now! I think they're really pretty, but I might be biased (I designed 'em). They're on sale now for \$3 apiece, and the proceeds will go towards the club's general fund. They'll be available for purchase at each club meeting, and of course, through snail-mail via the club Treasurer. Life Members will have the pins awarded to them retroactively. How nice!

That's all from my corner!  
Have yourselves a merry, happy whatever, and I hope to see a healthy, happy you in 2004! ☆



## Presidential Announcements

**AstroCon 2004** is coming up, and now's the time to start thinking of either attending it, or volunteering to help make it happen. The Astronomical League, the American Association of Variable Star Observers, the Association of Lunar and Planetary Observers, and the Astronomical Society of the Pacific are putting it on in our front yard: Mills College in Oakland! The Association of Northern California and the Eastbay Astronomical Society will be co-hosting the event, which will be held July 20 – 24, 2004. ASP Director **Mike Bennett**, and ALPO Board member and our very own Exec Dir Emeritus of the Chabot Space & Science Center, **Dr. Mike Reynolds**, will co-chair the meeting. (See Dr. Mike's letter to the EAS on Page 7.) The focus for this AstroCon will be on observational astronomy and public outreach. Field trips to Lick Observatory and Chabot Observatory are planned, and the usual accompaniment of vendors displaying their latest and greatest will be on hand, as well. While plans are still not final, the organizers hope to arrange a banquet on the floating museum, the aircraft carrier USS Hornet, to help celebrate its 35th anniversary, recovering Apollo 11. Weather permitting, they'll hold a star party on the flight deck, afterwards! Check out more details and recommendations for housing at Mills College or nearby hotels at the website, ([www.astrocon2004.org](http://www.astrocon2004.org)). This is a biggie, and it's right in our lap; best not to ignore it, or let it slip by!

**The Library Task Force** will meet at 2 PM on Sat, Jan 3rd in the Chabot Library to discuss the post-Anne Creese era and prioritize activities to make best use of volunteer time to make the Library available as quickly as possible. We will also have a work party on Saturday, January 24th 2 to 5 PM.

The next **Members Only View Night** is Sunday, January 25th, 6 - 11 PM.

Award season is coming up. The EAS Board will be considering the Helen Pillans Award on January 8. Past recipients are posted on the EAS web site ([www.eastbayastro.org](http://www.eastbayastro.org)). Suggestions may be made to any EAS board member.

The RTMC Board will be deciding the next Clifford Holmes Award, and Clyde Tombaugh Award recipients Jan 31. Previous recipients may be found on <http://www.rtmcastronomyexpo.org/archives.html>. Nominations may be sent to Carter Roberts ([cwroberts@earthlink.net](mailto:cwroberts@earthlink.net)) who is on the RTMC Board.

Sometime in Jan or Feb the Western Amateur Astronomers will select a recipient for the G. Bruce Blair Award. EAS is a member of the WAA so our representative will be able to nominate and/or promote a candidate. The full list of recipients is available at [http://www.waa.av.org/Blair\\_recip\\_99.html](http://www.waa.av.org/Blair_recip_99.html). Suggestions, preferably with a supporting document, should be give to any EAS Board member by the January 8th Board meeting. ☆

# Carter's trip to Antarctica

The Total Solar Eclipse of 23 November 2003. *All photos by Carter Roberts*

Eclipse chasers faced a unique challenge with the 2003 eclipse. The only land within the path was Antarctica. Ultimately the options boiled down to a month long cruise on a Russian icebreaker, a trip to the Russian base of Novolazarevskaya (Novo for short) or two very long flights.



First to be encountered by the Moon's shadow was the Kapitan Khlebnikov at latitude  $65^{\circ} 55'$  south, and longitude  $89^{\circ} 16'$  E. Some participants chose to observe from out on the ice while others went up to the bridge for the best view of the shadow coming across then ice. They were somewhat west of centerline and observed 1 minute and 12.8 seconds of totality with the Sun  $10^{\circ}$  above the horizon.

Farther to the south, the Croydon/QANTAS Boeing 747-400 extended range jet flew down the centerline with the eclipse directly out the left side of the plane and  $14^{\circ}$  above the horizon. From this vantage point totality was extended to 2 minutes 30 seconds, about 33 seconds longer than the maximum on the ground. The plane passed latitude  $70^{\circ}$  south during totality. I was on this marathon flight out of Melbourne that eclipsed the world record for the longest domestic flight with 13 hours 56 minutes in the air. From 35000 feet there was a spectacular view of the shadow racing in from behind the plane then vanishing ahead of us.

Approximately 22 minutes later the shadow raced past the chartered LanChile Airbus 340-313 operated from Punta Arenas, Chile. They encountered the shadow at  $78^{\circ}41'S$ ,  $51^{\circ}52'E$ , which afforded 2 minutes 26 seconds of totality. See <http://www.tq-international.com/AntarcticaFly/AntarcticaFlyReport.htm> for more information.

Last but certainly not least was the land-based trip to the Russian base Novo. Considerably delayed by a blizzard that blew their tents away, they finally arrived in Antarctica 6 hours before first contact. Information is available at <http://icstars.com/Antarctica/MidnightEclipseSeries/>.

One fabulous picture was the Astronomy Picture of the Day for December 8<sup>th</sup>.

There was also a plane from the Japanese TV station NHK that was seen by the group at Novo.

For everyone who ventured south this was an eclipse to never be forgotten. ★



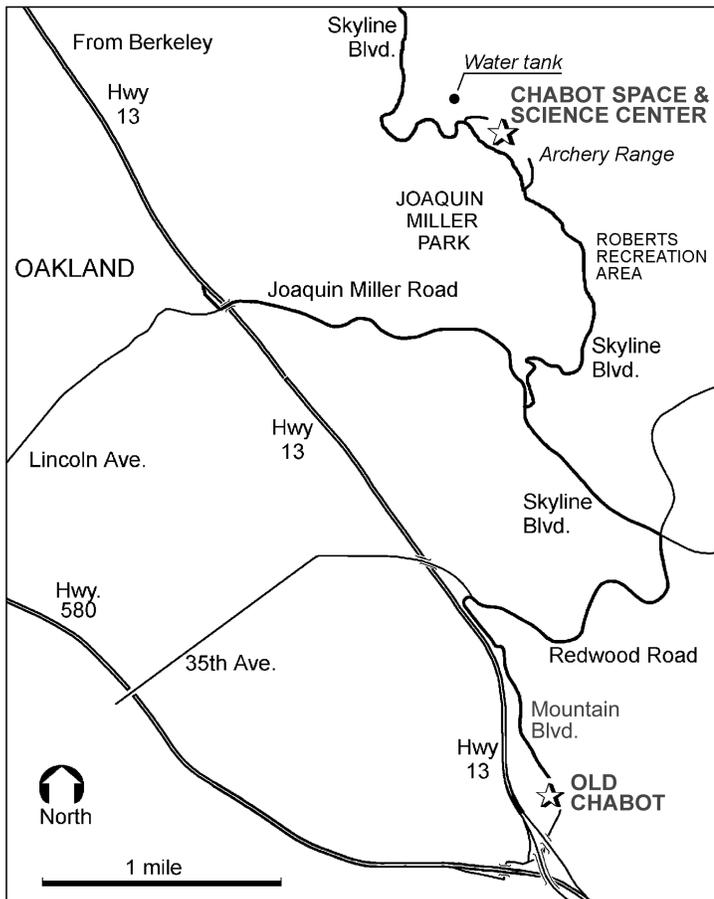
*Carter's 15 seconds of fame as he gives a televised interview on his airborne eclipse chase 35,000 feet above sea level.*



# Eastbay Astronomical Society

At Chabot Space & Science Center  
10000 Skyline Boulevard ● Oakland, CA 94619

December 2003  
RETURN SERVICE REQUESTED



## FUTURE CONJUNCTIONS

- 2003
- Dec 1-31 No EAS General meeting this month!
  - 11 EAS Board Meeting at Chabot
- 2004
- Jan 3 EAS General Meeting/Holiday Pot Luck Party at Chabot
  - 8 EAS Board Meeting at Chabot
  - 25 EAS-Only Star Party w/Rachel and Leah
  - Feb 7 EAS General Meeting
  - Mar 7 EAS Annual Awards Dinner at Chabot

## Eastbay Astronomical Society

President:	Carter Roberts	(510) 524-2146
		cwroberts@earthlink.net
Vice President:	Phil Crabbe II	(510) 655-4772
Treasurer, Membership:	Don Stone	(707) 938-1667
		ddcstone@earthlink.net

Articles and photos for *The Refractor* are encouraged. Deadline for the February 2004 issue is January 17, 2003. Items may be submitted by mail to the editor, Don Saito, 3514 Randolph Avenue, Oakland, CA 94602-1228. Internet email address: donsaito@pacbell.net Hm: (510) 482-2913.

## Join the Eastbay Astronomical Society

- Regular, \$24/year
  - Family, \$36/year
  - Contributing, \$40/year
  - Student, \$15/year (digital)
  - Sustaining, \$60/year or more newsletter, only
- Contact: Don Stone, EAS Membership Registrar  
Telephone: (707) 938-1667 Email: ddcstone@earthlink.net  
Mail: 19047 Robinson Road, Sonoma, CA 95476-5517